Ministry of Agriculture and Food
Ontario

ORDER NO. 88-075
MARCH 1988
AGDEX 450/660

Factsheet

AVIAN COCCIDIOSIS

(Replaces Factsheet "Coccidiosis and Enterohepatitis", September 1971)

R.J. Hampson
Veterinary Laboratory Services
Guelph, Ontario

Avian coccidiosis is a serious intestinal parasitic infection which is recognized wherever poultry are raised around the world. In spite of the advances made in prevention and control through management and chemotherapy, coccidiosis remains a major disease problem for poultry producers.

Coccidia are microscopic single cell protozoa which are considered to be species specific. This means that coccidia of chickens will not infect turkeys and vice-versa. The severity of the infection is proportional to the number of infective oocysts ingested. Birds in a poor nutritional state of health or affected by immunosuppressive conditions such as Marek's or infectious bursal disease are more susceptible. Once the oocyst is ingested the life cycle begins in the intestinal mucosa or inner lining and results in cellular damage. In four to eight days, depending on the species, oocysts are shed in the feces. Twelve to 30 hours are required in a moist environment with temperatures between 20° and 30°C. for the oocysts to sporulate and become infective. This is why birds raised outdoors on range will experience more outbreaks in the spring and summer. If raised in total confinement, outbreaks may occur anytime.

Clinical Signs

While day old chickens are susceptible to coccidiosis, outbreaks rarely occur before they are 2 weeks of age. Mature birds not exposed to coccidia remain highly susceptible but will develop a tolerance or immunity under conditions of limited persistent challenge. Clinically infected birds are depressed, pale, have ruffled feathers and wet blood-tinged droppings. Laying hens will have a decrease in production.

In turkeys, infection may occur by 9 days with few outbreaks reported after twelve weeks of age. The majority of the outbreaks occur between 2 and 7 weeks.

The infected poults are droopy, listless, have ruffled feathers, huddle in groups and have a light brown mucoid diarrhea. Although flecks of blood may be seen, the copious bloody discharge of cecal coccidiosis in chickens is not typical in turkeys. Mortality is generally higher in turkeys than chickens and may reach 75 – 100% if treatment is not initiated early.

Postmortem Lesions

The pathogenicity and lesions of coccidia will vary depending on the infecting species. Some species have distinct characteristic lesions and preferred sites of infection. In chickens, lesions in the serosa or outer surface of the intestine may vary from whitish lattice streaking to pinpoint hemorrhage. The inner surface or mucosa of the intestine will be thickened, congested or hemorrhagic. There is generally a mucoid exudate with all coccidia and cores of clotted blood with cecal coccidiosis.

In turkeys, the lesions are more variable. The intestines are generally dilated but severe hemorrhage is visible only occasionally. The thickened mucosa is congested and in certain cases there is a gray curd-like material at the ceca intestinal junction. Flecks of blood in the feces are a less common finding in turkeys. Microscopic examination is necessary to differentiate coccidiosis from viral induced hemorrhagic enteritis of turkeys.

Transmission

Coccidial oocysts may survive for more than a year in soil that is shaded from sunlight. Their survival and infectivity is enhanced by moisture and wet areas in the barnyard or around leaky waterers in the pens. The organisms may be carried over long distances through transport in infected shedding birds. Dirty farm equipment, transport crates, and people with dirty boots are all active forms of transmission. Oocysts, due to their size, are not generally considered to be carried in dust or fomites in the atmosphere.

Immunity

It was once thought that when birds were immunized against coccidiosis they were resistant to the disease for life. This view is no longer held and it is now known that immunity is temporary and is maintained by repeated exposure to coccidial organisms.

Birds being grown to maturity must be immunized against coccidia unless they spend their life in wire bottom cages. There are accepted ways to achieve this required immunity.

89-00627/

Natural immunity is developed in a flock through the ingestion of a small number of infective oocysts. The oocysts shed from the first life cycle of this infection ensure further exposure and continued reinforcement of the developing immunity. This is the ideal way to achieve immunity and recommended for breeder and laying flocks maintained on the floor. A commercial vaccine containing a mixed population of a limited number of infective oocysts is now available. This allows for controlled exposure and flock immunization. Another method is to use a coccidiostat in the feed until the birds are 7 to 8 weeks of age. At this time the level of coccidiostat is reduced until it is completely withdrawn over the next few weeks. Feed restriction programs at the same time will also result in reduced coccidiostat intake. Either method allows for a gradual increase in the coccidial challenge and the flock develops immunity. Some of the older drugs are useful for these programs since when fed at low levels they permit sufficient challenge to produce immunity. Since broiler chicks are marketed at an early age it is not practical to immunize them against coccidiosis. In these birds it is more economical to use currently available drugs throughout the entire growth cycle for control of coccidiosis. Drugs belonging to the ionophore group have proven to be effective for control in broilers and roasters. These drugs have resisted the developed tolerance which coccidia have readily achieved for most other types of cocidiostats.

Treatment

Sulfaquinoxaline, sulfamethazine or combinations of these drugs are preferably used in the water, although they may also be used in the feed. Since these drugs are sold at different strengths, the required dose should be checked on the container or package each time before being used. Care should be taken when using sulfa drugs in the water during hot weather since excess drinking could result in sulfa toxicity.

The effective life of a coccidiostat appears to be from two to four years. Since new coccidiostats are being marketed from time to time the poultry person should make inquiries about the products which are currently most efficacious.

Prevention

As previously mentioned coccidial oocysts require warmth, moisture and time to become infective. Therefore damp or wet areas in pens and around waterers should be attended to immediately. Areas of damp litter should be removed and replaced. Thorough cleaning of barns and pens after each flock is highly recommended to prevent a coccidial challenge which results in morbidity and mortality.

8M
ISSN 0225-7882